

**AMENDMENT UNDER 37 C.F.R. § 1.111**  
**U.S. Application No. 09/995,677**

**REMARKS**

Claims 1-10 are all the claims pending in the application, new claims 9 and 10 having been added as indicated herein. Claims 5-8 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 1, 3-5, 7, and 8 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Jung (U.S. Patent No. 5,724,953), hereinafter referred to as Jung. Claims 2 and 6 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Jung in view of Nakamichi (U.S. Patent No. 5,685,284).

As a preliminary matter, the drawings are objected to, for the reason set forth on page 2 of the Office Action. In response, Applicant submits the enclosed proposed drawing corrections, as Applicant believes that the corrections shown therein obviate the Examiner's objections to the drawings.

**§ 112, second paragraph, Rejections - Claims 5-8**

The Examiner rejects claims 5-8 for the reasons set forth on pages 2-3 of the Office Action. Applicant amends claims 5-8, as indicated herein, and submits that these amendments obviate the Examiner's rejections of these claims.

**§ 102(b) Rejections (Jung) - Claims 1, 3-5, 7, and 8**

The Examiner rejects claims 1, 3-5, 7, and 8 under § 102(b) for the reasons set forth on pages 3-4 of the Office Action.

With respect to independent claims 1 and 5, Applicant amends these claims, as indicated, herein, and submits that Jung does not teach or suggest at least "wherein fuel is not injected

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when the O<sub>2</sub>-sensor is in the inactive state,” as recited in independent claims 1 and 5. That is, Jung teaches that after an O<sub>2</sub>-sensor is determined to be inactive, fuel is injected through the fuel injector. *See Jung, col. 3, line 33 - col. 4, line 3.* In fact, the Examiner even admits that Jung teaches “forcibly changing the fuel supplied to the engine and monitoring the O<sub>2</sub>-sensor response”; this action occurs after an O<sub>2</sub>-sensor is determined to be in an inactive state. *See numbered paragraph 16 of Office Action.* Therefore, at least based on the foregoing, Applicant submits that independent claims 1 and 5 are patentably distinguishable over Jung.

Further, Applicant submits that claims 3, 4, 7, and 8 are patentable at least by virtue of their respective dependencies from independent claims 1 and 5.

*§ 103(a) Rejections (Jung / Nakamichi) - Claims 2 and 6*

The Examiner rejects claims 2 and 6 under § 103(a) for the reasons set forth on pages 5-6 of the Office Action. In response, Applicant submits that claims 2 and 6 are patentable at least by virtue of their respective dependencies from independent claims 1 and 5. Nakamichi does not make up for the deficiencies of Jung.

Finally, new claims 9 and 10 are added, as indicated herein, to round out the scope of protection solicited for the present invention. Applicant submits that these claims are patentable at least by virtue of their respective dependencies.

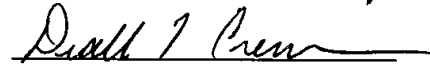
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

**The claims are amended as follows:**

1. (Amended) An O<sub>2</sub>-sensor fault diagnosis apparatus comprising:

an O<sub>2</sub>-sensor for detecting concentration of oxygen contained in an exhaust gas of an internal combustion engine;

a feedback control portion for controlling a quantity of fuel supplied to the internal combustion engine through feedback control according to an output signal of the O<sub>2</sub>-sensor;

a state judging portion for judging whether the O<sub>2</sub>-sensor is in an active state or in an inactive state on the basis of an voltage of the output signal of the O<sub>2</sub>-sensor; and

a fault diagnosis portion for diagnosing whether the O<sub>2</sub>-sensor has any fault on the basis of the voltage of the output signal of the O<sub>2</sub>-sensor under a condition where it is judged that the O<sub>2</sub>-sensor is in the inactive state, wherein fuel is not injected when the O<sub>2</sub>-sensor is in the inactive state.

5. (Amended) An O<sub>2</sub>-sensor fault diagnosis method comprising the steps of:

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~~a state-judging step for judging whether an O<sub>2</sub>-sensor, which detects concentration of oxygen contained in an exhaust gas of an internal combustion engine, is in an active state or in an inactive state on the basis of an voltage of an output signal of the O<sub>2</sub>-sensor; and~~

~~a fault diagnosis step for diagnosing whether the O<sub>2</sub>-sensor has any fault on the basis of the voltage of the output signal of the O<sub>2</sub>-sensor under a condition where it is judged that the O<sub>2</sub>-sensor is in the inactive state, wherein fuel is not injected when the O<sub>2</sub>-sensor is in the inactive state.~~

6. (Amended) The O<sub>2</sub>-sensor fault diagnosis method according to Claim 5, further comprising a step of changing a level of the output signal of the O<sub>2</sub>-sensor by changing an input resistance,

~~wherein in said fault diagnosis diagnosing step, a fault of the O<sub>2</sub>-sensor is identified on the basis of a change in a level of the output signal of the O<sub>2</sub>-sensor caused by changing an input resistance.~~

7. (Amended) The O<sub>2</sub>-sensor fault diagnosis method according to Claim 5, wherein in said ~~fault diagnosis~~diagnosing step, it is diagnosed whether the O<sub>2</sub>-sensor has any fault each time it is judged in the state-judging step that the O<sub>2</sub>-sensor is in the inactive state.

8. (Amended) The O<sub>2</sub>-sensor fault diagnosis method according to Claim 5 further comprising an informing step for sending a notice if the O<sub>2</sub>-sensor is diagnosed to have a fault in said ~~fault diagnosis~~diagnosing step.

**Claims 9 and 10 are added as new claims.**